

## **REVIEW**

The original application sets forth claims 1-79, of which claims 1, 16, 25, 34, 38, 42, 53, 65 and 69 are independent claims. Presently, claims 34-52 and 65-79 stand rejected under 35 U.S.C. §112, first paragraph, as being non-enabling of certain specified features of the present invention. Additionally, claims 5-7, 13-15, 21, 24, 26, 28, 29, 33-52, 57-59, 62 and 65-79 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite with respect to certain specified terms. Claims 1-4, 8-12, 16-20, 22, 23, 25, 27, 30-32, 34-36, 38, 39, 41, 53-56, 60 and 61 stand collectively rejected under 35 U.S.C. §102(b) as being anticipated by Benbow (U.S. Patent No. 4,491,789). Finally, the drawings stand objected to under 37 C.F.R. 1.83(a) for failing to show each feature of the invention as specified in the claims.

## **DRAWING OBJECTION**

In response to the objection of the present drawings, Applicants propose the attached amended Figure 4, to more clearly indicate a "light source", an "antenna" and a "Hall effect sensor" not otherwise shown in the drawings. Inclusion of such elements is not believed to constitute the addition of new matter as the specification as originally filed fully supports such elements inclusion in the present invention, as well as their structural relationships and location relative to other specified elements. A redlined drawing indicating the proposed changes is included as Appendix A.

## **35 U.S.C. §112, 1st PARAGRAPH REJECTIONS**

With regard to the 35 U.S.C. §112, 1st paragraph rejection of claims 34-52 and 65-79, it is respectfully submitted that based upon the following remarks, Applicants traverse such rejection.

Specifically, there exists a supposed lack of support within the specification which is enabling to one of ordinary skill in the art with respect to:

- (a) How the Hall effect sensor and antenna are associated and interrelated with other claimed elements; and
- (b) How the apparatus of the present invention operates –
  - (i) How the Hall effect sensor is used; and
  - (ii) How the output of the sensor is related to the metrology board, the antenna and the light source.

While these elements form no particularly critical aspect of the present invention they are included to complete the concept therein. It is respectfully submitted that the present invention is directed to a modular electricity meter whose design allows for greater ease and flexibility of construction while maintaining superior reliability and accuracy of measurement by ensuring the proper alignment of critical component parts regardless of the modular component used in the construction of the meter. In the presently preferred embodiment, a Hall effect sensor is used to measure the electricity used despite its forming no particularly critical aspect of the present invention.

Further, to offer additional background information numerous U.S. patents were properly incorporated by reference in the originally filed specification. Therein are adequate and fully developed explanations of the above-listed aspects of the present invention. For example, U.S. Patent Nos. 4,881,070; 4,465,970; 5,014,213 and 4,803,484, all disclose devices within the meter for obtaining metering data and for producing output signals for transmission to a remote location. Additionally, U.S. Patent Nos. 5,694,103; 4,742,296; 4,491,790; 5,027,059; 5,338,996 and 5,523,677, all of which are properly incorporated by reference disclose examples of either a laminated "figure-8" power meter core or a three-legged ferromagnetic meter core used with a Hall effect sensor to determine electricity consumption.

As such information is properly incorporated by reference and serves to clarify any potential confusion on the part of one of ordinary skill in the art, it is believed that there is no basis for such a 112, 1st paragraph rejection. However, for purposes of clarification attached (as Appendix B) is a portion of a textbook discussing the basic operation of a Hall effect device and a paper presented to an electricity conference that points out a Hall effect device's applicability to utility meters.

It is respectfully submitted that the above comments serve to overcome the 35 U.S.C. §112, 1st paragraph rejections of claims 34-52 and 65-79. As such, it is believed that such claims are in condition for allowance and withdrawal of the rejection and allowance of the claims is earnestly solicited.

#### **35 U.S.C. §112, 2nd PARAGRAPH REJECTIONS**

Claims 5-7, 13-15, 21, 24, 26, 28, 29, 33-52, 57-59, 62 and 65-79 stand collectively rejected under 35 U.S.C. §112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the present invention. It is respectfully submitted that each of the terms and phrases, which form a basis for the present rejection, would be fully understood by one of ordinary skill in the art upon a review of the originally submitted specification and drawings. Despite such belief, it is with the following additional comments that Applicants respectfully traverse such rejections.

In claim 1, the phrase "metrology board" refers to reference number 140, which is clearly shown in Figures 4, 7, 8, 9 and 11. As defined on page 1 of the specification, metrology is "the science of measurement" and thus as further explained on pages 25-26 and page 38, specifically lines

21-29, a "metrology board" is an integrated circuit board including (in the present exemplary embodiment) a Hall cell sensor for measuring electricity usage.

In claims 5, 21, 29 and 57, the term "Hall effect sensor" refers to reference number 141 of amended Figure 4. A careful reading of page 24, lines 12-19 will indicate that such a feature (used in conjunction with a "figure-8" or three-legged laminated core) can be clearly understood by one of ordinary skill in the art upon a review of properly incorporated U.S. patents 5,694,103 and 4,742,296, for example. Finally, the attached textbook section (referenced above) further explains the basic operation of a Hall effect sensor.

In claims 6, 28, 37, 40, 48, 58, 67 and 75, the phrase "light source" refers to an infrared LED (reference no. 215 of amended Figure 4). Such "light source" serves to indicate when the basic metrology circuit board is functioning properly. *See* page 39, lines 22-30. The "light source" can be viewed via a "light pipe". *See* pages 29 and 42, lines 17-24 and 1-11, respectively, as well as, Figures 4 and 6-9.

In claims 7, 26, 34, 38, 47, 59, and 74, the term "antenna" refers to a wire (reference no. 261 in amended Figure 4) that may be located on a secondary circuit board 162 for wireless radiating and/or receiving radio wave transmissions of usage data or for being reprogrammed. The specification, on page 42 and 43, lines 27-35 and 1-4, respectively, discusses the use of a single antenna versus multiple antennas to transmit measured or calculated data from the basic metrology circuit board and/or optional higher function circuit boards to a remote receiver. Similarly, the specification also discusses the use of the antenna to receive programming instructions or control inputs.

In claims 13, 24, 33, 49, 62, and 76, the phrase "main circuit" refers to the electrical pathways into which the present invention is to be inserted. In other words, the "main circuit" comprises in part a pathway including the incoming power lines (into which the meter is plugged) through the spades (reference nos. 60, 62, 64 and 66) of the present invention and back into the power supply lines of the building or other locale to which the power is being delivered.

It should be noted that in response to the first Office Action, Applicants inadvertently and incorrectly identified the "main circuit" as meaning the metrology board (reference no. 140). Such identification was incorrect. The "main circuit" as indicated in claims 13, 24, 33, 49, 62, and 76 is instead as described above. A further explanation of what constitutes the "main circuit" may be found in the specification on page 21, lines 4-28.

In claim 52, the phrase "additional output means" refers to one of many specified means supported throughout the specification. An electronic output means (reference no. 32) is specified in one embodiment shown in figure 7 on page 31, lines 5-31. Two different mechanical type output means (reference nos. 238 and 260) are shown in figures 8 and 9 and discussed from page 32, line 20 through page 34, line 17. Further still, remote output means (i.e., an antenna for transmission of data to a remote location) are discussed on page 43, lines 8-24, which provide the option for pulse outputs (via a lightpipe; *see* Figures 6-9), optical ports (*see* Figure 1) or wireless transmission of data to remote locations (*see* Figure 11).

Based on the above comments, it is respectfully submitted that the 35 U.S.C. §112, 2nd paragraph rejections are traversed. Withdrawal of such grounds of rejection and allowance of the claims is earnestly solicited.

### 35 U.S.C. §102(b) REJECTION

With respect to the 35 U.S.C. §102(b) rejection of claims 1-4, 8-12, 16-20, 22, 23, 25, 27, 30-32, 34-36, 38, 39, 41, 53-56, 60 and 61, Applicant respectfully traverses such grounds of rejection with the following remarks.

Before setting forth a discussion of the prior art applied in the Office Action, it is respectfully submitted that controlling case law has frequently addressed rejections under 35 U.S.C. §102. "For a prior art reference to anticipate in terms of 35 U.S.C. Section 102, every element of the claimed invention must be identically shown in a single reference." Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 677, 7 U.S.P.Q.2d 1315, 1317 (Fed. Cir. 1988; emphasis added). The disclosed elements must be arranged as in the claim under review. See Lindemann Machinefabrik v. American Hoist & Derrick Co., 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). If any claim, element, or step is absent from the reference that is being relied upon, there is no anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565, 230 U.S.P.Q. 81 (Fed. Cir. 1986; emphasis added).

As previously discussed in a similar prior rejection and now discussed in even greater detail below, independent claims 1, 16, 25, 34, 38 and 53 encompass certain common aspects that distinguish them from the proposed reference. In such regard, it is respectfully submitted that the reference, Benbow, merely serves to demonstrate the patentability of Applicant's claimed invention. Specifically, Benbow fails to adequately disclose every element of the claimed invention and as such cannot serve at law as an anticipating reference to the present invention under 35 U.S.C. §102.

While designed for the same basic function, measuring and reporting electricity consumption data, it is respectfully submitted that Benbow is not the equivalent of and does not disclose the

systems and methodologies of the present invention. The present invention provides a modular electricity meter permitting the use of certain common modular components in combination with a variety of data output methods. Such various configurations, through the use of tapered posts and corresponding openings in various components, as well as, integrated snap-fit arrangements allows for greater strength and physical stability of the claimed meter, while guaranteeing the proper alignment between component parts for accurate operation of the meter without requiring the use of normal construction methods, such as screws or bolts.

With regard to independent claims 1 and 53, it is respectfully submitted that Benbow fails to disclose the use of resilient connectors between the spades and the basic metrology board. Nowhere within the proposed reference is there a mention of the use of resilient connectors as an electrical connection between the spades and the metrology board. While the rejection states that the use of such connectors “appears” to be “well known in the art,” there is no offer of support for such a statement within the proposed reference.

Until such time as a reference supporting such position is provided, it is respectfully submitted that Benbow fails to disclose “every element” of the claimed invention and thus cannot at law serve as an anticipatory reference to any of claims 1-4, 8-12, 53-56, 60 and 61. *In re Zurko*, 258 F.3d 1379, 1386, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001) (stating that in patentability determinations limitations of claimed inventions cannot be met with general conclusions about ‘basic knowledge’ or ‘common sense’ to one of ordinary skill in the art, but must be found in concrete evidence of record). In the absence of a piece of prior art clearly showing the use of resilient connectors in the art, an affidavit attesting to such a position is requested.

With respect to independent claim 16, it is respectfully submitted that the proposed reference, Benbow, fails to disclose a circuit board as specified in the claims. While the rejection cites reference numbers 48 and 54 of Benbow as constituting a circuit board Applicant disagrees. As claimed, the "circuit board" of claim 16 provides "selected customized features for said electricity meter beyond said metrology board electricity consumption signal."

It is respectfully submitted that the proposed combination of reference numbers 48 and 54 are not capable of providing any additional feature to the meter of Benbow. Reference number 48 is a "baffle plate" intended to provide heat protection for the TOD register. *See* column 5, lines 1-7. Further, despite the TOD register being mounting to such baffle plate, it is not used as a "circuit board" in any sense as the term as is understood by one of ordinary skill in the art. Further still, such a deficiency in the rejection is not made up for by the inclusion of reference number 54. Such element is a "cable" that connects the TOD register with a pulse initiator. In fact, the cable (ref. no. 54) is not even connected to the baffle plate. *See* column 4, lines 55-57, wherein the "cable 54...passes through a hole in the baffle plate 48."

Based upon such an interpretation, it is respectfully submitted that Benbow fails to disclose "every element" of the claimed invention and thus cannot at law serve as an anticipatory reference to any of claims 16-20, 22 and 23. It is, therefore, believed that such claims are presently in condition for allowance and acknowledgement of such is earnestly solicited.

As above, it is respectfully submitted that Benbow fails to disclose the use of tapered posts and corresponding holes in various of the modular components to ensure their proper alignment both with each other and the base plate and casing of the present invention, as is specified in independent claim 25. Nowhere within the proposed reference is there even a suggestion of the use



of tapered posts and corresponding holes as a means of connecting modular components within a meter. It is respectfully submitted that Benbow does not even disclose a modular meter. While the rejection states that the use of such connectors “appears” to be “well known in the art,” there is no offer of support for such a statement within the proposed reference.

Until such time as a reference supporting such position is provided, it is respectfully submitted that Benbow fails to disclose “every element” of the claimed invention and thus cannot at law serve as an anticipatory reference to any of claims 25, 27 and 30-32. *In re Zurko*, 258 F.3d 1379, 1386, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001) (stating that in patentability determinations limitations of claimed inventions cannot be met with general conclusions about ‘basic knowledge’ or ‘common sense’ to one of ordinary skill in the art, but must be found in concrete evidence of record). In the absence of a piece of prior art clearly showing the use of tapered posts and corresponding holes as a means of aligning modular components in an electricity meter, an affidavit attesting to such a position is requested.

Finally, with respect to independent claims 34 and 38, it is respectfully submitted that Benbow fails to disclose the inclusion of an antenna. Benbow discloses only the use of direct field readings of the measured results as allowed either manually through a visual reading of the display or via an optical data link which similarly requires the physical presence of technical field personnel. The present invention includes an antenna for transmitting measured electricity consumption data to a remote receiving location. As such, Benbow fails to disclose “every element” of the claimed invention and thus cannot at law serve as an anticipatory reference to any of claims 34-36, 38, 39, and 41.